Lab Med / Urinalysis

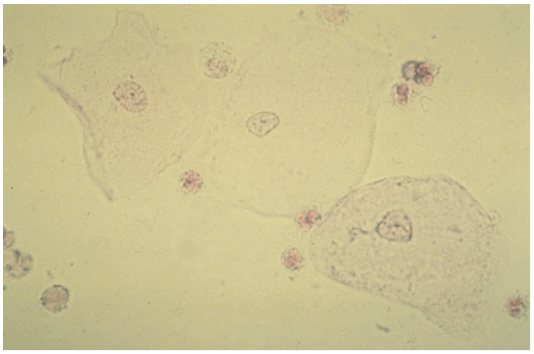
Case 1
Case Hx: A 23-year-old woman with anorexia nervosa is brought to her physician for evaluation. A routine urinalysis (dipstick and microscopic evaluation) is performed. The results are:

Gross Examination:
Color: Straw
Turbidity: Clear
Specific Gravity: 1.010
pH: 6

Microscopic:
WBC: 1/hpf
RBC: 2/hpf
Hyaline cast 1/hpf
Bacteria: rare

Dipstick:
Protein: negative
Sugar: negative
Acetone: positive
Bile: negative
Hemoglobin: negative
Nitrite: negative
Leukocyte esterase: negative
Urobilinogen: present

Microscopic examination showed:



Routine UA consists of gross examination of the urine, dipstick and microscopic examination.

Analytes are classified as Trace, 1 to-4 plus. For protein, trace positive results (which represent a slightly hazy appearance in urine) are equivalent to 10 mg/100 ml or about 150 mg/24 hours (the upper limit of normal). 1+ corresponds to about 200-500 mg/24 hours, a 2+ to 0.5-1.5 gm/24 hours, a 3+ to 2-5 gm/24 hours, and a 4+ represents 7 gm/24 hours or greater.

Are these values normal? What is normal for each?

Normals:

Gross Examination:	**Dipstick:**
Color:	Protein:
Turbidity:	Sugar:
Specific Gravity:	Acetone:
pH:	Bile:
	Hemoglobin:
Microscopic:	Nitrite:
WBC:	Leukocyte esterase:
RBC:	Urobilinogen:
Hyaline cast	
Bacteria:	

What conditions are associated with cloudy urine?

Name several conditions with protein in the urine

Name several conditions in which hemoglobin appears in the urine

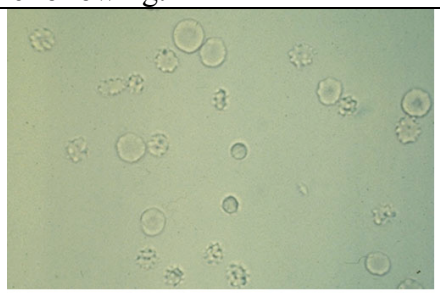
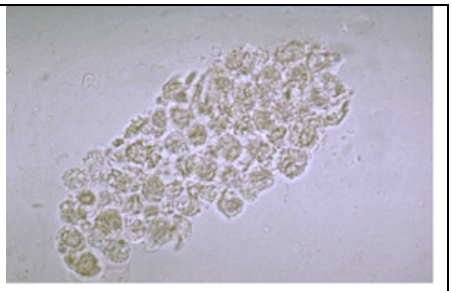
Name several conditions in which glucose appears in the urine.

Name several conditions in which ketones appear in the urine

Case 2
Case Hx: A 35-year-old female presents to her physician with fever and pain. A urinalysis performed by the lab showed:

Gross Examination:	**Dipstick:**
Color: Straw	Protein: positive
Turbidity: Cloudy	Sugar: negative
Specific Gravity: 1.02	Acetone: positive
pH: 8	Bile: negative
	Hemoglobin: positive
Microscopic:	Nitrite: negative
WBC: 40/hpf	Leukocyte esterase: positive
RBC: 7/hpf	Urobilinogen: present
Hyaline cast 1/hpf	
Bacteria: present	

Microscopic examination showed the following:

		
Image 1	Image 2	Image 3

Based on these findings what is your diagnosis?

TABLE 214-3. CLINICAL AND LABORATORY CRITERIA FOR DIAGNOSIS OF URINARY TRACT INFECTION

Diagnosis	Clinical Criteria	Laboratory Criteria
Asymptomatic bacteriuria	No urinary symptoms	$> 10^5$ CFU/mL uropathogens in 2 MSU > 24 h apart; with or without > 10 WBC/μL
Acute uncomplicated UTI in women	Dysuria, urgency, frequency, suprapubic pain; no infections in past 2 wk; no fever or flank pain	$> 10^2$ CFU/mL uropathogens in MSU; > 10 WBC/μL
Acute uncomplicated pyelonephritis	Fever, chills; flank pain on examination; other diagnoses excluded; no history or evidence of urologic abnormalities	$> 10^4$ CFU/mL uropathogens in MSU; > 10 WBC/μL
Complicated UTI	Any combination of symptoms listed above; one or more factors associated with complicated UTI	$> 10^5$ CFU/mL uropathogens in MSU; > 10 WBC/μL
Recurrent UTI in women	More than two culture-documented episodes of acute uncomplicated infection in past 12 mo; no structural or functional abnormalities	$> 10^5$ CFU/mL uropathogens in MSU; > 10 WBC/μL

CFU = colony-forming units; MSU = midstream urine culture.

What organism is suggested by the alkaline pH?

What are the different types of cells, crystals, and casts that can be seen on microscopic examination?

CELLS	***CASTS***	***CRYSTALS***

Case 3
Case Hx: A 10-year-old child is being evaluated by his physician. A urine was sent to the lab for evaluation. The findings were:

Gross Examination:
Color: Red
Turbidity: Cloudy
Specific Gravity: 1.010
pH: 6

Microscopic:
WBC: 1/hpf
RBC: 2/hpf
Hyaline cast 1/hpf
Bacteria: rare

Dipstick:
Protein: 1+
Sugar: negative
Acetone: positive
Bile: negative
Hemoglobin: 3+
Nitrite: negative
Leukocyte esterase: negative
Urobilinogen: present

Microscopic examination showed the following:

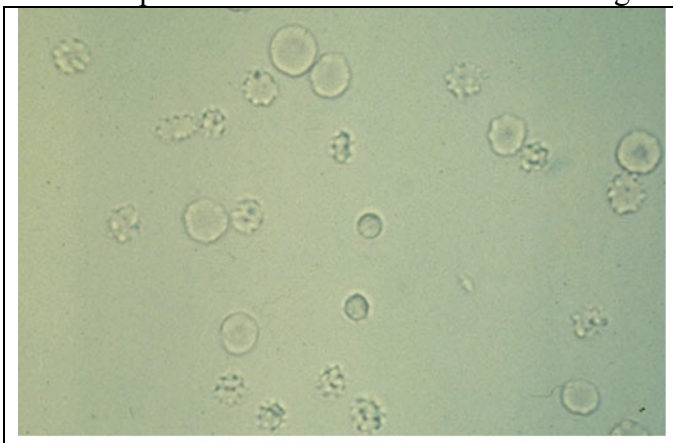
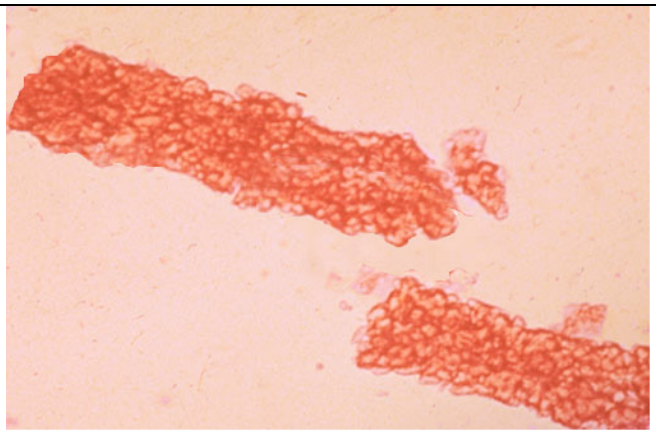
	

Image 1	Image 2

Based on these findings what is your diagnosis

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